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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/683,326

12/14/2001

Robert C.U. Yu

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7590

10/10/2003

PATENT DOCUMENTATION CENTER

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EXAMINER

KILKENNY, TODD J

ART UNIT

PAPER NUMBER

1733

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,326

Applicant(s)

YU ET AL.

Examiner

Todd J. Kilkenny

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment, which includes a statement by applicant's representative that the references to Swift et al (US 6,436,502) and Yu et al (US 6,318,223) were, at the time of the invention was made, owned by, or subjected to an obligation of assignment to, the same person, has effectively removed the availability of the references as prior art under 102(e) and therefore both references are withdrawn.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1 – 22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 23 of copending Application No. 09/683329. Although the conflicting claims are not identical, they are not patentably distinct from each other because all the limitations the claims of the present application care fully encompassed by the claims of copending application 09/683,329.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 4, 5, 6, 7, 9, 10, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Yu et al (5,688,355).

Yu et al teach a process for fabricating flexible belts using laser ablation, wherein referring to Figure 5, the end region of a flexible electrostatographic imaging member,

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including a supporting substrate (layer 90; Figure 6), is subjected to a masked ultraviolet excimer laser beam to create at least one trough or recess (76) that produces first desired features on a first portion of the substrate support sheet, including removal of material from the supporting substrate sheet. Referring to Figures 6 – 9, a second portion of the flexible electrostatographic imaging member, including a second portion of a supporting substrate also is subjected to a similar treatment to produce second desired features, complementary to the first desired features, including removal of material from the supporting sheet. As diagrammed in Figures 6 – 9, two ends are overlapped to mate the first and second formed patterns and are then bonded together to produce the flexible electrostatographic belt.

As to the claim limitation of applying at least one coating, including a photoconductive coating, to the support substrate sheet, although coated prior to forming the laser cut portions, Yu et al suggest that the belt comprises the supporting substrate sandwiched between an anticurl backing layer and composite layer 94, wherein composite layer 94 includes a charge transport layer 26, charge generating layer 28, adhesive layer 30, charge blocking layer 32 and conductive layer 34 as shown in Figure 1 (Col. 19, line 54 – Col. 20, line 19). Therein, Yu et al is taken to anticipate all the claim limitation of claim 21, with the exception of placing first and second pattern templates on the first and second portions of the substrate support sheet.

As to claims 2, 4 and 5, referring to Figure 5, the laser used to form the desired features by material removal is directed through a masking plate to create the desired shape of the recess. Furthermore, Yu et al suggest that the excimer laser beam

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traverses the substrate end region in creating the at least one recess, wherein such traversing is taken to read on applicant's claimed inducing relative motion between the laser beam and the substrate sheet

As to claims 6 and 7, it is believed that the excimer laser as suggested by Yu et al reads on an electron beam.

As to claims 9 and 22, Yu et al further suggests to ultrasonically weld to bond the overlapped end regions together.

As to claim 10, the excimer laser of Yu et al is ^{taken} ~~then~~ to be a form of electromagnetic radiation.

As to claim 21, Yu et al is taken to anticipate all of the recited claim limitations as suggested above in regard to claims 1, 2, 5 and 9.

6. Claims 16 – 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Schlueter et al (US 5,997,974).

Schlueter Jr et al teach an invisible seam electrographic belt that is formed by first joining the ends of a flexible substrate to form a puzzle cut seam. The puzzle cut pattern may be formed according to any conventional shaping technique, such as laser cutting with commercially available lasers that generate a beam of sufficient width and intensity that will provide the desired cuts (Col. 5, lines 36 – 56; Col. 6, lines 61 – 64). Schlueter et al further teach the formed seam belt can be used in electrostatographic imaging members that includes providing undercoating layers over the bonded seam of the belt such that an “electrically invisible” seamed imaging member is produced (Col.

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11, lines 16 – 33). Referring to Figure 10, the undercoating layers include a charge blocking layer (42), an adhesive layer (43), a charge-generating layer (44), a charge transport layer (45), and optionally a protective overcoating layer (46). Schlueter et al teach forming the seamed belt and thereafter coating the formed belt to create an electrostatographic imaging member.

Teaching to laser cut to form first and second puzzle cuts on the ends of first and second portions of the substrate is taken to anticipate applicant's claimed "bombarding a first portion with first emissions to produce a first desired feature and bombarding a second portion of the substrate support with second emissions to produce second desired features complementary to the first desired features" (see Figures for complementary first and second cut features).

As to claim 18, see Figure 10 and the corresponding disclosure in Schlueter et al (Col. 11, line 24 – Col. 14, line 54) for description on the layers of the electrostatographic belt.

As to claims 19 and 20, Schlueter et al teach the belt may be made of any suitable materials and provide examples in Col. 6, lines 39 – 60.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1 – 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlueter et al (US 5,997,974) in view of Yu et al (US 5,688,355). The rejection of record is maintained.

As addressed in 102 (b) rejection above, US 5,997,974, hereafter US '974, to Schlueter Jr et al, teaches an invisible seam electrographic belt that is formed by first joining the ends of a flexible substrate to form a puzzle cut seam. The puzzle cut pattern may be formed according to any conventional shaping technique, such as laser cutting with commercially available lasers that generate a beam of sufficient width and intensity that will provide the desired cuts (Col. 5, lines 36 – 56; Col. 6, lines 61 – 64). US '974 further teaches the formed seam belt can be used in electrostatographic imaging members that includes providing undercoating layers over the bonded seam of the belt such that an "electrically invisible" seamed imaging member is produced (Col. 11, lines 16 – 33). Referring to Figure 10, the undercoating layers include a charge blocking layer (42), an adhesive layer (43), a charge-generating layer (44), a charge transport layer (45), and optionally a protective overcoating layer (46). That is, US '974 teach forming the seamed belt before coating the belt to render the belt an electrostatographic imaging member.

While the primary reference teaches to laser cut to form puzzle cut edges, US '974 fails to suggest employing first and second emissions to produce first and second desired features on a first and second portion of the substrate sheet, respectively, wherein producing said first and second desired features includes removing material from the support sheet. Furthermore, while teaching to form a puzzle cut pattern for the

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mating edges via conventional techniques, including an excimer laser, US '974 appears not to teach placing first and second pattern templates on first and second portions of the support sheet, respectively to prevent emissions from striking the support sheet there under.

As to producing first and second desired features, including removing material from the substrate sheet, US 5,688,355, hereafter US '355 to Yu is cited as teaching a process for the fabrication of flexible belts using laser ablation. To eliminate the shortcomings associated with prior art seamed belts, US '355 teaches forming a thin profile seam structure from overlapped ends that are shaped altered into a specific configuration by removing materials from each end with a masked excimer laser prior to overlapping. To achieve this objective, a masked excimer laser beam is employed to reshape the two ends of a rectangular sheet to achieve a specific surface profile at the ends of the sheet prior to overlapping (Abstract; Col. 9, lines 55 – 64; Col. 13, lines 25 – 31; Col. 16, lines 58 – 63).

Therefore, as to independent claims 1, 11, 16 and 21, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ the process of US '355, which includes forming a thin profile seam structure from overlapped ends that are shape altered into a specific configuration by removing materials from each end with a masked excimer laser so as to form an overlapped joint in the puzzle seamed belt of US '974 that in combination with the puzzle mating, would provide a joint that does not depend solely on an adhesive or welding connection at the edges, but also includes a material interlocking fit so as to provide a stronger

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connection with a smoother seam that eliminates shortcomings associated with prior art seamed belts as recognized by the secondary teaching of US '355 (US '355; Col. 7, lines 22 - 27).

As to claim 16, if applicant contends that the first and second desired features as recited read over puzzle cuts, claim 16 has been included in the rejection above so as to be render obvious overlapped first and second desired features in view of Yu et al along with additional independent claims.

As to dependent claims 2, 4, 5 and 12, in disclosing to laser cut, the secondary reference to Yu et al suggests employing a mask (element 72, Figure 5) to focus the laser onto the belt, wherein the laser is an ultraviolet excimer laser beam. Furthermore, in forming more than one recess (applicant's claimed desired feature) along the width of the belt, Yu et al suggest traversing the laser across the belt, which appears to define relative motion between the laser and the support sheet.

As to dependent claims 6 and 7, as suggested in the 102(b) rejection above, it is believed the excimer laser beam as taught by both Schlueter et al and Yu et al read on electron beam. In any event, it would have been obvious to one of ordinary skill in the art to employ an electron particle beam as such is considered to be a well known equivalent emission source to a laser wherein one of ordinary skill in the art would readily appreciate that by substituting an electron beam, only the expected results would be achieved as Schlueter et al suggest that any commercially available lasers can be employed.

As to dependent claims 8 and 18, see Figure 10 and the corresponding disclosure in Schlueter et al (Col. 11, line 24 – Col. 14, line 54) for a description on the layers of the electrostatographic belt, which appears to include photoconductive materials.

As to dependent claims 9, 13 and 22, the primary reference to Schlueter et al (US '974) suggest the seamed belt may be joined by ultrasonic welding, or alternatively by applying adhesive between the two ends of the belt.

As to dependent claim 10, Schlueter et al disclose laser cutting with commercially available lasers and suggest CO₂ or excimer laser generating beams. Both suggested laser types are believed to provide forms of electromagnetic radiation.

As to dependent claims 14 and 15, the secondary reference to Yu et al suggest removing material to form rabbeted joints as depicted in Figures 7 – 9.

As to dependent claim 17, the complementary features formed by Yu et al are formed on opposite surfaces of opposite ends of the substrate support.

As to dependent claims 19 and 20, the primary reference (US '974) teaches the belt may be made of any suitable materials and provide examples in Col. 6, lines 39 – 60.

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schlueter et al (US 5,997,974) in view of Yu et al (US 5,688,355) as applied to claim 1 above, and further in view of Asahi et al (US 6,120,725).

While teaching to mask the laser beam in forming the recesses, Yu et al fail to suggest more than one mask. However, as evidenced by the teaching to Asahi et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate an additional mask in the laser ablation process as providing multiple masks better enables more complex profiles to be formed.

Response to Arguments

10. Applicant's arguments filed 7-23-03 have been fully considered but they are not persuasive. Applicant argument that there is no evidence of motivation to combine the references together is not persuasive. In combining the secondary reference of Yu et al to the primary reference to Schlueter et al (US '974), the action relies on Yu et al's disclosed benefits of employing the connection technique as disclosed, the benefits being that such belt connections provide a material interlocking fit which extends the life of flexible belts to achieve improved resistance to tearing, delamination, and cracking at the seam, as well as suppressing mechanical interactions between the seam and devices such as cleaning blades (Yu et al; Col. 7, lines 22 – 27). These benefits are taken as evidence provided by Yu et al, which would motivate one of ordinary skill in the art to combine Yu et al with other belt construction teachings (e.g. Schlueter et al) which render obvious applicant's claimed invention.

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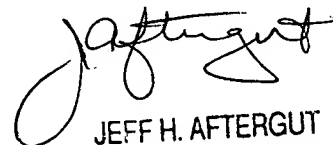
Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is **(703) 305-6386**. The examiner can normally be reached on Mon - Fri (9 - 5).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

TJK

TJK


JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300